



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,894	03/04/2004	Hisanori Yokura	01-603	4806
23400	7590	10/18/2005	EXAMINER	
POSZ LAW GROUP, PLC 12040 SOUTH LAKES DRIVE SUITE 101 RESTON, VA 20191			ROGERS, DAVID A	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

2

Office Action Summary

Application No.

10/791,894

Applicant(s)

YOKURA ET AL.

Examiner

David A. Rogers

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 13 September 2005 have been fully considered but they are not persuasive.

The applicant argues that there is no motivation to add the silicone gel layer to the humidity sensor taught by Sensiron (International Patent Application Publication WO 01/42776A1). The applicant argues that LG (International Patent Application Publication WO 01/42774A1) teaches that "a passivation film (10) is formed over the humidity sensing film (9) so that humidity is not propagated into the humidity sensing film."

The above argument misinterprets the teachings of LG. First, LG teaches a humidity sensor having two regions. The first region is a humidity sensing region consisting of two electrodes (reference item 8) and a humidity sensing film (reference item 9). The second region is a reference region. This second region consists of two electrodes (reference item 8'), a humidity sensing film (reference item 9'), and a passivation film (reference item 10). It is clear from LG's figures 2A and 2B that the passivation film only covers the second humidity sensing film (reference item 9'). It does not cover the first humidity sensing film (reference item 9). The first humidity sensing film (reference item 9) is still exposed to the environment.

Next, the applicant's arguments state, in effect, that one would not be motivated to modify the teachings of Sensiron since LG has a passivation film.

LG was relied upon to teach the use of a polyimide as a known polymer for use in as a humidity sensing film. Furthermore, the sensing region of LG does not have a protective layer, as noted above. Finally, the grounds of rejection set forth modifying the teachings of Sensirion, not the teachings of LG.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over International Patent Application Publication WO 01/42776A1 to Sensirion AG (Sensirion) in view of International Patent Application Publication WO 01/42775A1 to LG Electronics, Inc. (LG) and United States Patent Application Publication 2001/0015089 to Kleinhans *et al.*

Sensirion teaches a capacitive humidity sensor comprising (a) a substrate (reference item 1); (b) an insulating layer (reference item 7); (c) a first electrode (reference item 2); (d) a second electrode (reference item 3); (e) a protective layer (reference item 8); and (f) a humidity sensing layer (reference item 4). Sensirion teaches that the substrate is silicon. Sensirion also teaches that (a) the insulating layer is a silicon oxide; (b) the electrodes are metal; (c) the protective layer can be silicon oxide or silicon nitride; and (d) the humidity

sensing layer is a polymer that absorbs humidity. As seen in figure 1 the electrodes (reference items 2 and 3) are formed as comb-toothed elements connected to respective common electrode portions. The comb-toothed elements are alternately arranged. The electrodes are formed on the insulating layer (reference item 7). As seen in figure 3 the protective layer (reference item 8') is formed such that it covers the electrodes and the gap between the electrodes. Sensirion teaches the claimed invention except for the use of a moisture-permeable layer formed on the humidity sensing layer.

LG discloses a substrate (reference item 6) upon which is an insulating layer (reference item 7), an electrode pair (reference item 8), a moisture sensing film (reference item 9). The substrate is silicon. The insulating film is formed of SiO_2 , Si_3N_4 , or SiO_xN_y . The humidity sensing layer is formed of a polyimide, which is a commonly used polymer for humidity sensors. Polyimide exhibits excellent thermal and hygroscopic properties. See page 2, paragraphs 0032-0034. The electrode pair is formed as forked, interlocking members as seen in figure 2A.

Kleinhans *et al.* teaches a humidity sensor (reference item 1). This sensor comprises (a) a substrate (reference item 2); (b) a dielectric capacitor structure (reference item 3); and (c) a silicone or fluorine gel (reference item 4) covering the sensor. Kleinhans *et al.* teaches that the protective gel is permeable to moisture, but keeps contaminants away from the humidity sensing layer. See page 1, paragraph 0009-0014.

The applicant teaches that their invention uses a polyimide polymer as the humidity sensing layer along with a silicone gel coating. This is the same as taught by the prior art of Sensirion in view of LG and Kleinhans *et al.* Accordingly, the silicone gel layer will have a higher dielectric property than the polyimide layer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Sensirion with the teachings of LG and Kleinhans *et al.* to provide a humidity sensor comprising a silicone/fluorine gel coating over a polyimide layer (acting as a humidity sensing layer) in order to further protect the sensor and prolong its useful life.

Conclusion


4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Rogers whose telephone number is (571) 272-2205. The examiner can normally be reached on Monday - Friday (0730 - 1600).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800


dar
11 October 2005